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ABSTRACT

Three areas of current literature addressing the problem of low and declining teacher quality are included in this 60-citation annotated bibliography. The first area, past trends and the current status of teachers in the workforce, was explored in an effort to determine how education and teachers came to their present situation. In the second area, the effect these trends have on effective teachers, the current shortages and surpluses of teachers in various subject areas were explored. The third area studied, possible improvements in the quality of teachers, was explored for programs being proposed to solve the problems revealed as teacher surpluse, shortage, and quality. A summary of findings on trends in education is presented and some conclusions and recommendations are offered. (JD)

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AN ANNOTATED BIBLIOGRAPHY OF THE LITERATURE DEALING WITH EDUCATIONAL TRENDS AND THE EFFECT THIS HAS ON THE TEACHING WORKFORCE

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INTRODUCTION

Much educational literature published today focuses on what is wrong with our public schools. Students who have graduated from our high schools are labeled functional illiterates. Many are unable to live as productive individuals in our technical society. Young people in college are unable to master beginning college mathematics courses. Because of this forty percent of introductory college mathematics courses are remedial. (Sobel 1983) The problem is so widespread that most states have made competency testing mandatory for graduation. When students fail, teachers are blamed. (Malkfosky 1983) It is the aim of this paper to examine educational trends and determine its effect on the teaching workforce.

STATEMENT OF THE PROBLEM

Today the status, prestige and morale of American teachers is at a low point. (Sykes 1983) The American education system is in danger of failing. Many people have felt that the major problem in education rested with teachers. Teachers are poorly qualified and thus

unable to do their jobs. The teaching profession has become unable to attract academically qualified candidates, so the quality of teachers has slight chance to improve. (Malkofsky 1983) The teachers we have now may become the best, because the quality of new teachers have been judged low and declining. By examining the teaching workforce and its trends toward shortages and surpluses, weaknesses and strengths in the quality of its members could be pin-pointed and recommendations made.

PURPOSE OF THE STUDY

The demand for educational services will be increasing in this decade and the next. Forty percent of all new jobs in the 1980's will be high-technology in nature. (Guthrie and Zusman 1982) Students must leave the public schools with the basic skills necessary to live in a society that is highly automated and technical. There is twice as much to learn today than twenty years ago, and schools have the same amount of time in which to instruct. (Buckthorpe 1979) Sobel viewed this problem in terms of national survival. While Guthrie and Zusman felt that the United States would be reduced to a second-rate world power. Quality teaching

is a must if this is not to occur. Only by examining the teaching workforce can current trends be broken and a more qualified system of teacher candidates and thus better education be established.

ORGANIZATION OF THE STUDY

To address the problem of low and declining teacher quality three areas needed to be investigated and addressed. The first area to be researched, past trends and the current status of teachers in the workforce, should reveal how education and teachers came to their present situation.

The second area, the effect these trends have on quality teachers, looked at the current shortage and surplus of teachers. It examined this problem and its effect on student achievement and teachers. Projections are also discussed.

The third area studied, possible improvements in the quality of teachers, saw various programs being proposed to solve the problems revealed as teacher surplus, shortage and quality.

LIMITATION OF THE STUDY

The data and studies on this problem of quality teachers were mixed. Many states do not regularly conduct supply and demand studies on teachers. As a result, much of the literature available on the topic was based on survey and questionnaire results. At times the terms and language in the state reports or the individual surveys were not the same which made comparison difficult. Most of the surveys were conducted by special interest groups in order to point out and solve problems particular to their organization or field.

GLOSSARY

demand -- "the quantity of a commodity that will be bought at a particular price and not merely the desire for a thing." (Hanson 1967:112)

functional literacy -- "demonstrated ability to read and write." (Good 1973:342)

shortage -- "a widespread lack of supply of some material on a local, regional or national level, ..." (Ammer and Ammer 1977:384)

supply -- "the amount that will come onto the market over a range of prices. The higher the price prevailing in the market the greater the quantity of a commodity that will be supplied." (Hanson 1967:396)

surplus -- "occurs in the market if the price is above the equilibrium price." (Hanson 1967:397)

teacher qualification (quality) -- "the education, experience, and physical, social, and mental characteristics of an instructor that determine his fitness for an educational position." (Good 1973:464)

ANNOTATIONS

PAST TRENDS AND CURRENT STATUS OF TEACHERS IN THE WORKFORCE

Bakalis, Michael J. "American Education and the Meaning of Scarcity." Phi Delta Kappan, 63 (1981): 7-12.

Our nation's workethic and its educational system was based on economic abundance. Today we are experiencing economic scarcity. A college education no longer guaranteed success. Schools and industries have declined. With the rising age of the labor force and the declined ability of management, the educational system is in retrenchment and losing. Teachers should deal with the supply and demand factors in their profession or quality education will continue to decline. Schools must face economic scarcity issues and broaden its base of operation.

Blosser, Patricia E. Science Teacher Supply and Demand. Educational Resources Information Center, Ed 232 842, National Institute of Education, Science Education Fact Sheet No. 1, Columbus, Ohio, 1983.

A high surplus of teachers has been reported, but when the data has been broken down a geographic and certification shortage has been noted. This shortage, especially in science and mathematics has long been predicted. Demand for teachers has been influenced by such factors as: 1) the state of the economy, 2) military requirements, 3) changes in social conditions, and 4) the development of new curriculum. The supply of teachers has been influenced by such factors as: 1) possible career choices, 2) financial aid for education majors, 3) the availability of education programs, 4) conditions within the education field, 5) birth rates, and 6) enrollment in private schools.

Buckthorpe, Robert M. "Teacher Job Security vs. Declining Enrollments." Orbit, 10 (1979): 6-8.

In the 1950's and 1960's any money spent on education was not considered wasted. However, in the 1970's this attitude changed. Government began to impose ceilings on educational spending. Teachers realized their job security depended on the whims of political priorities. Teachers began to demand better working conditions, programs, salaries and security. Seniority and tenure rights became an issue. The general public, many of whom did not have children in school, complained about their tax bill. Programs and teachers were cut. It is the author's point of view that teachers face a greater task today in the classroom than ever before. In the same time framework there is more to teach. Costs have remained the same or risen. Declining enrollments and teacher job security are compatible when you consider our nations youths are at stake.

Dillich, Lisa S. "The Job Market for Teachers in the 80's: Signs of Improvement..." Occupational Outlook Quarterly, 24 (1980): 22.

This article looked at the teacher job market today and projected tomorrow. Today nearly eighty percent of those qualified to teach are doing so and those who are not are more fully employed compared to other college graduated. Tomorrow looked better for elementary teachers, but there will be a surplus of secondary teachers. The highest success rate reported for employment are in areas of special education, mathematics, business and general elementary. The worst employment success reported was in the areas of art and music.

Dillich, Lisa A. "The Job Market for Teachers in the 80's: Charting the Course." Occupational Outlook Quarterly, 24 (1980): 23-27.

This article briefly examined the factors influencing the employment prospects for new teachers in the 1980's. The factors of births, enrollments, pupil-teacher ratios, employment, openings and supply and demand indicated a need for elementary teachers beginning in 1985 and levelling around mid-1986. Secondary school teachers will continue to be a surplus throughout the 1980's.

Each factor discussed is accompanied by a concise graph or chart.

Donny, William F. Teacher Demand and Supply for Elementary and Secondary Schools in Pennsylvania. Educational Resources Information Center, Ed 169 025, Pennsylvania State Department of Education, Bureau of Information Systems, Harrisburg, Pennsylvania, 1978.

The supply of new teacher graduates in Pennsylvania has decreased at a very slow rate. A balance has existed in the areas of chemistry, physics and Latin. A shortage is existing in general science, distributive education and trade and technical courses. All other certification areas showed a surplus. The problem has continued because the over supply of new teachers has not stopped, and due to a shortage of funds class size has not been reduced and academic requirements for teacher education programs have not been raised.

Frankel, Martin M. "Projecting a School Enrollment Turnabout." American Education, 17 (1981): 34-35.

Interpreted data from the 1980 Census predicted that the first five years of the 1990's will experience an enrollment boom. In the late 1990's enrollment will have increased at a moderate rate. These Census Bureau projections are of limited value at the local level due to regional migration and local housing patterns. Local Educational Agencies must study data on these areas along with enrollment projection when planning school organization and curriculum.

Grant, W. Vance. "The Demographics of Education." American Education, 7 (1981): 7-10.

Annually over sixty-one million Americans are involved directly in education. That is about twenty-seven percent of the workforce. Enrollment in elementary schools are increasing, while secondary enrollments are declining. Enrollments in higher education remained stable. In general enrollment in public schools are declining and in private schools it has remained stable.

Graybeal, William S. Population Trends and Their Implications for Association Planning, 1981. Washington, D.C.: National Educational Association, 1981, 14.

Reviewing the trends in number of persons likely to be enrolled and the number of faculty employed in schools enabled school systems to plan programs and set priorities. Some of the trends discussed are: national population, school-age population, variations among states, variations within states, teacher layoffs, teacher supply and demand and private school enrollments. The research memo concluded that if these present trends continue, the public school teaching force will need to be reduced by ten percent beginning in the fall of 1981 and continue to decrease each year until 1984. Teacher-pupil ratio will stay the same or increase, some programs may be cut, the number of graduates preparing to teach will decrease, thereby reducing the teaching surplus, but creating a shortage in some assignment areas.

Kasouf, Deborah. "Staff Shortage Fears as More Resign." Times Educational Supplement, (New York), 9 October 1981, 16.

A critical shortage in all teaching areas has been predicted if teacher graduates and teacher resignation trends continue. Poor salaries, working conditions, security in schools, lack of student motivation, lack of parental involvement and lack of teacher incentives were listed as problem areas. Legislative action was urged to solve these problems.

Kuch, Patricia L. "For Teachers, Better Times Ahead?" American Education, 17 (1981): 23-26.

The author who is employed by the National Center for Education Statistics reviewed the current period of teacher economic woes. After an outline of the variables that affected teacher supply and demand, and the combination of its changes, she predicted an increase in the teacher job market and average salary with a few exceptions. Charts and graphs in the article are helpful.

McCurdy, Donald W. "The Case for Government Support." The Science Teacher, 48 (1981): 48-50.

President Reagan's proposed 1981 budget cuts for the National Science Foundation would eliminate most science education programs. With the shortage of mathematics, science, and engineering teachers this would be a drastic mistake. Student achievement in these fields are already down and poor. New and better programs are urged if the gap between scientists and nonscientists is to be closed. This is necessary because everyone must live today in an increasingly technical and computerized world.

Olstead, Roger G., and Jack L. Beal. Secondary School Science and Mathematics Teacher Supply and Demand in Washington State. Educational Resources Information Center, Ed 204 142, n. pub., n.p., 1980.

Results of a study on supply and demand in Washington State revealed these results: 1) mathematics and science teacher vacancies have been steadily increasing, 2) majors in these areas have been steadily decreasing, 3) demand for science teachers have increased thirty-five percent, mathematics teachers seventy-six percent, 4) these shortages will become acute throughout the 1980's and 5) junior high, middle school level teachers are in most demand and need.

Page, Jane A., Fred M. Page, Jr., J. Donald Hawk, and John R. Lindsey. "Most High School Seniors Ignore Teaching Career." Phi Delta Kappan, 62 (1980): 525.

Critical teacher shortages were found to exist in the Southeastern United States. However, senior high school students interviewed would not consider teaching as a profession. Poor salaries, discipline problems and poor working conditions were cited as reasons.

Palaich, Bob and Donald Burnes. Teacher Shortages in the Next Decade. Educational Resources Information Center, Ed 231 815, Education Commission of the States, Issuegram 24, Denver, Colorado, 1983.

Looking at the current teacher shortage, the authors predicted a shortage of elementary, exceptional children, foreign language and language arts teachers. Also a shortage of women and minority teachers. Some of the reasons for these shortages are: 1) increased enrollments, 2) new focus on math and science in schools, 3) improved pupil-teacher ratios, 4) improved special education services, and 5) increased emphasis on training students for jobs. The author also reviewed some current short-term solutions to the shortage problems, but believed the problem can only be solved in the long run.

Snyder, Thomas. "Subject Fields of Public School Teachers." American Education, 18 (1982): 29.

Fifty-four percent of all public school teachers are at the elementary level, with general elementary certification the largest group. Secondary level teachers are more specialized in training, employing the largest numbers in English and Social Studies. For 1979-1980 the supply of new teacher graduates is high. However, by the mid-1980's more elementary level teachers will be needed and mathematics and science teachers at the secondary level.

Sykes, Gary. "Contradictions, Ironies, and Promises Unfulfilled: A contemporary Account of the Status of Teaching." Phi Delta Kappan, 65 (1983): 87-93.

The author looked at three topics and they formed the relationship for his contradictions. They are: 1) the teaching occupation and its position in the U.S. occupational structure, 2) institutionalization of teacher education and the multipurpose university, 3) prevailing view of the relationship between knowledge and practice in teaching. He listed six reasons for a declining supply in the number and quality of teachers: 1) declining enrollments, 2) decline in teacher salaries, 3) decline in working conditions, 4) loss of occupational prestige, 5) increased career opportunities for women and minorities and 6) a broader range of attractive occupational prospects for students.

Sykes, Gary. "Teacher Preparation and the Teacher Workforce: Problems and Prospects for the 80's." American Education, 19 (1983): 23-31.

Two facts were reported in the paper. Teacher preparation has been virtually unchanged in the last fifty years and that the academically ability of education majors is low and has continued to decline. Unless something is done to make teaching more attractive to students and teachers, the quality of teaching will not improve. Current programs will only alleviate the problem temporarily.

"Teachers' Ranks Hurt by Low Pay: Study." The South Bend Tribune, 1 July 1984, 5.

A study released at the National Education Association's recent convention concluded that low salaries are keeping many students from teaching careers. The "Nation at Risk" report, also released, cited critical shortages in math, science and foreign language. These shortages are projected to continue.

THE EFFECT OF THESE TRENDS ON TEACHERS

Applegate, Jimmie R., and Linda McLeary. "Teacher Supply: Shortage or Surplus?" Phi Delta Kappan, 63 (1982): 565-566.

Teacher shortages are acute in certain certification areas and geographic regions. For each region and some individual states the areas of shortage are listed. The areas in common are: mathematics, science, special education, industrial arts, and vocational education. While the supply of new teacher graduates is down, birth rates and migration patterns must be studied to correctly determine demand.

Blackmon, C. Robert, Charles W. Davidson, and Richard A. Musemeche. "Teacher Supply and Demand: What Are the Facts?" National Association of Secondary School Principals Bulletin, 66 (1982): 71-73.

This survey results of public school superintendents found that there is indeed a teacher shortage in many areas and a surplus in a few. The shortage areas listed are: mathematics, science, vocational agriculture, and distributive education. Facts of this situation were also examined.

Chandler, Harry N. "Our Fickle Public Schools and Teacher Shortages." Journal of Learning Disabilities, 16 (1983): 373-374.

The article compared the special education teacher shortage of the 1970's to the current shortage of math and science teachers. Reallocation of funding and programs to meet current problems and the net effect this has on students and programs were discussed. This was seen as harmful. The article is biased toward the special education programs, as the author was a special education teacher.

DeRoche, Edward F., and Edward Kujawa, Jr. "A Survey of Teacher Supply and Demand in the West." Phi Delta Kappan, 63 (1982): 566.

The demand for teachers is growing in the West. A shortage exists in special education, mathematics, vocational education, music and the physical sciences. Surplus areas reported are: health/physical education, social sciences, elementary education and English. The urban areas of some states reported a forty-nine percent decrease in vacancies. However, all states expressed a need for teacher graduates with dual majors or minors in clearly certifiable areas.

Employability of the Elementary and Secondary School Teachers in Indiana, Indiana College-Level Manpower Study. Educational Resources Information Center, Ed 127 315, Indiana State Commission for Higher Education, Report No. Seven, Indianapolis, Indiana, 1976.

One of the main objectives of the study was to make an assessment of future employment opportunities for teachers in Indiana. The survey looked at recent employment trends in Indiana, the current demand and supply situation, future demand and the declined supply of teachers in Indiana. They concluded that the teacher surplus in secondary education will be intensified by the decade's end, but some jobs will be available in the specialty areas of industrial arts, vocational agricultural, mathematics and advanced science areas. Combinations of two or more proficiency areas will also offer increased employment opportunities. Elementary education will stabilize its need for new teachers by 1990.

Harris, Clifton S. "The Responses of Teacher Educators to the Shortage of Teachers in Texas." Phi Delta Kappan, 64 (1982): 287-288.

The teacher shortage in Texas is imminent. While it is likely to be a national problem, in Texas it will be felt sooner, be more severe and probably last longer. Past trends showed a four percent annual decrease in the supply of teachers, while birth rates continued to rise. In response, the Texas legislature raised salaries (still not competitive) and imposed more rigorous standards. It is hoped that the higher quality training requirements will increase the supply of qualified teacher candidates.

Harris, Clifton S. "Texas Teacher Supply: A Crisis Ahead." Texas Tech Journal of Education, 7 (1980): 189-195.

After documenting the decline in the supply of teachers, new teacher graduates and enrollments, the author projected a general shortage of teachers in crisis proportions in 1983. Implications of this decline are: 1) unqualified persons will be in the classroom, 2) acute general shortage in 1983, 3) pressure on legislature to improve salaries, 4) meet some shortages by hiring teachers from out-of-state, and 5) that new standards and certifications will be created. Also pointed out in the article was the fact that the quality of students who have entered the field of education has declined and that problem is equally a crisis.

Heikkinen, Michael W. "On the Supply of Science and Math Teachers in Idaho." Phi Delta Kappan, 64 (1982): 288.

The supply of science and mathematics teachers in Idaho followed the national pattern. Only one-half the demand for science teachers and one-third the demand for mathematics teachers could be met by Idaho graduates during the five years studied. No recommendations were made to alleviate the shortage, but school districts were urged to review existing programs and to act quickly as the problem is growing.

The Impact of Teacher Shortage and Surplus on Quality Issues in Teacher Education. Educational Resources Information Center, Ed 238 890, Prepared by the Task Force on Shortage/Surplus/Quality Issues in Teacher Education through the American Association of Colleges for Teacher Education, Washington D.C., 1983.

Teacher shortages exist in certain geographical regions and speciality areas. These areas have been well documented. Sixteen states and their programs to deal with this problem were studied. The changes these programs are causing are aimed at improving the quality of education specifically through national organizations, local inservice programs, state licensing requirements and college admission standards and programs.

Lashier, William S., and Wan Yung Ryoo. "A Longitudinal Study of the Supply and Demand for Physics and Chemistry Teachers in Kansas." Journal of Research in Science Teaching, 21 (1984): 17-26.

This study outlined and documented age specific characteristics and trends of science teachers in Kansas. It discovered that one-third of young science teachers, twenty-nine years old or younger, quit teaching every year. By 1990 less than ten percent of all teachers will be thirty-four years old or younger and have been certified within the last ten years. If the trend continued and public confidence in education remained low then this low priority will be reflected in poor scientific literacy of students and an increasing number of judged unqualified science and mathematics teachers.

Malkfosky, Morton. "Teachers Deserve More Credit, More Money, More Precise Guidelines." Learning, 12 (1983): 57-58.

Teachers are being charged as incompetent and at fault for poor student achievements. Lack of proper district education objectives is listed as the reason. By giving teachers precise community objectives and guidelines, merit pay increases and continual evaluation by the school principal, both teachers and education will improve and regain its professional place.

Metzger, Devon J., and Elaine G. Wangberg. "Many Female Teachers Would Choose Other Jobs." Phi Delta Kappan, 63 (1981): 213.

A recent survey showed that forty percent of the female elementary teachers would choose another career if given the choice again. Poor working conditions, and broadening female career options were the main reasons listed. The current teacher shortage could be worse if fewer qualified female education graduates and current female teachers opt for other career opportunities.

Ornstein, Allan C. "Baby Boom: Bad News for City Schools." Principal, 62 (1982): 7-13.

The Department of Education projected that elementary enrollments will begin to increase in the mid-1980's. However, the author predicted that for our cities this will not solve their current problems, only add to them. Students entering these schools will have a variety of needs and problems that would have to be solved with fewer resources. The reasons cited are: 1) increased mobility of the school supporting middle class to the sun-belt states, 2) attitudes toward marriage and child bearing, 3) weakening of traditional manufacturing sector, and 4) new students will require remedial help out of proportion to the financial and political resources of most cities.

Ornstein, Allan C. "The Job Market for Teachers." Clearing House, 56 (1983): 411-415.

The job market reported for teachers is confusing. Special education, learning disabilities and bilingual teachers are in great demand. Other shortages exist in the sunbelt regions. However, if looking at supply and demand for teachers with quality education in mind more teachers are needed. Kindergartens, pre-school programs, special needs, adult education, counselors and smaller classes could all improve the quality of American education if money were available for such programs. Anyone viewing the teaching market should be aware of the current hiring practices and collective bargaining issues, if a valid career choice has to be made.

Page, Fred M., and Jane A. Page. "Perceptions of Teaching that May Be Influencing Current Shortage of Teachers." College Student Journal, 16 (1982): 308-311.

Pre-service and inservice teachers generally had the same perceptions about teaching. This trend was noted because both groups ranked polled features of teaching closely. Both groups perceived teaching a good profession to enter for women, but for males the ranking decreased. More pre-service teachers ranked teaching enjoyable than did inservice teachers.

Ricken, Robert. "A Missing Generation of Teachers." The Clearing House, 54 (1980): 124.

The supply of new teachers is down because of low enrollments and a poor job market. The author felt a balance of both master teachers and beginning teachers was necessary to maximize all the talents in a school's staff.

Roth, Robert A. "A Comparison of Methods and Results of Major Teacher Supply and Demand Studies." Journal of Teacher Education, 32 (1981): 43-46.

This article looked at the confusion regarding the facts of teacher supply and demand. By comparing seven major studies, the author listed states with shortages, certification shortage areas, certification surplus areas, new teacher graduates supply, enrollment projections and teacher employment projections. The seven reports studies are: Teacher Supply and Demand in Public Schools, 1980-1981, New Teachers in the Job Market (Metz and Crane, 1980), Projections of Education Statistics to 1988-89 (Frankel and Gerald, 1980), Teacher Supply and Demand in Public Schools, 1980-81 (Jones 1981, NEA State Directors of Teacher Certification Study), Teacher Supply and Demand in the United States 1980 (ASCUS 1980), The Changing Labor Market for Teachers in the South (Galambos, 1980), and A Survey of Teacher Supply and Demand Data Collection Systems in NASDTEC Central Region States-1980 (Roth, 1981).

Roth, Robert A. A Survey of Teacher Supply and Demand Data Collection Systems in NASDTEC Region States. Educational Resources Information Center, Ed 207-942, Paper presented at the Winter Meeting of the National Association of State Directors of Teacher Education and Certification, Dallas, Texas, February 1981.

This report of the NASDTEC of which Indiana is one of thirteen states was compiled through questionnaire. A review of the responses indicated that most states were experiencing teacher shortages in special education, science, mathematics, industrial arts and agriculture. Illinois also had a shortage in home economics and Kansas in language arts. The report also listed state by state response to the questionnaire, which was included in the article. Also a list of areas of current certification needs.

Shepherd, Gregory J. A Graduate Student Looks at the Job Market. Annandale, VA: Bulletin of the Association for Communication Administration, No. 46, 1983, 46-47.

Graduate students realized that opportunities in the academic job market are limited. Competition for these jobs involved their own peers as well as assistant and associate professors. While capabilities played a major role in securing academic employment, so did expectations. The author concluded that while there are jobs available, they may not be the ones most graduate students expected.

Skillett, Jack D. Teacher Supply and Demand in Kansas Public Schools, Second Annual Survey. Educational Resources Information Center, Ed 200 543, n. pub., n.p., 1981.

Results of a survey on teacher employment opportunity are reported. Elementary teachers are in adequate supply to slight shortage in Kansas. The areas of counseling, library science, music, reading and specialized areas provided the greatest opportunity for employment. The Northwest, Southwest, Southcentral and Southeast districts have the greatest shortages, while smaller school districts provided more employment opportunity.

Sobel, Max A. "The Crisis in Mathematics Education." Educational Horizons, 61 (1983): 54-56.

This article sees a crisis of national survival as a direct result of the mathematics teacher shortage. Ramifications and reasons of the shortage are discussed with public indifference a major factor. Strong support for the various legislative and institute programs are urged. Recommendations of each program are listed and explained. Also, why the author felt so strongly on the topic.

"Teachers--Supply, Demand and Status." Principal, 62 (1983): 51-54.

This article reviewed the decade of the 1970's and moved into the current situation. A brighter picture was painted for elementary teachers in the mid-1980's, but there will be a shortage of specialty teachers and in particular geographic regions. A projected increase in demand for teachers predicts a supply of more qualified teachers. Better teacher retention was also predicted. Page 54 has a chart of layoffs and shortages and currently employed teachers that is very concise and made available by the U.S. Department of Education, National Center for Education Statistics.

Tyler, Ralph W. "Teachers and Teaching in the 1980's." The Interstate Compact, 14 (1980): 45-46.

There is little doubt that the demand for education will diminish in the 1980's. The demand for education has increased as unskilled labor has been replaced by machines and complex occupations have developed. The teacher is the key to improvements in education, especially in the 1980's economic picture. Teachers should have high aspirations for their students and show that they care. They should feel teaching is a great mission in life. They should be dedicated. To promote this objective, inservice programs should help teachers identify critical education problems in their own schools and how to attack and solve them.

Way, Joyce W. "Are Job Forecasters Painting A Realistic Picture for Teacher Education Graduates?" Phi Delta Kappan, 63 (1981): 211-212.

Telephone surveys of education graduates painted a more successful picture of teacher employment than did college placement and state education department surveys. The telephone survey grouped graduates into four groups: 1) successful seekers, 2) semi-successful seekers, 3) nonseekers, and 4) unsuccessful seekers. Using these categories teacher employment has been rising and education graduates are more successful at finding employment in all areas. A gloomy future for education graduates is unjustified. The article only surveyed in New York State.

Wilce, Hilary. "Morale Sinks as Jobs Go." Times Educational Supplement, (New York), 14 August 1981, 6.

World wide shortages of teachers have been documented and reported. As a result of job insecurity and a feeling that government is not backing education, experienced teachers are turning to other jobs. The morale of those who remained have sunk. It is feared that this trend will discourage prospective teacher candidates and there will be shortfalls later when enrollment begins to rise.

Williams, Peter. Planning Teacher Demand and Supply. Fundamentals of Educational Planning--27. Educational Resources Information Center, Ed 213 107, United Nations Educational, Scientific, and Cultural Organization, 1979.

This study explored the problems facing educational planners. Because education is labor-intensive and expenditures have reached a point where continued escalation is impossible, cost efficiency is imperative. Creating capacity to respond to change is an objective important in responding to teacher demand and supply trends. The booklet investigated projecting teacher requirements and supply and demand.

Williams, Robert T. "Beneath the Surface of the Mathematics Teacher Shortage." The Mathematics Teacher, 74 (1981): 691-694.

Mr. Williams who is employed by North Carolina State University looked at the chronic math teacher shortage in his state and how they have dealt with the problem. After a detailed examination of North Carolina's pattern of math teacher certification and employment, he made four recommendations to alleviate the pressure of the shortage and hopefully end it. The four recommendations are: 1) only certified math teachers should be teaching math, 2) understand the legal/policy constraints affecting the hiring of uncertified math teachers, 3) understand the factors of supply and demand for certified math teachers, and 4) analyze teacher assignments and supply.

POSSIBLE IMPROVEMENTS

Dunathan, Arni T. "Teacher Shortage: Big Problems for Small Schools." Phi Delta Kappan, 61 (1980): 205-206.

Small school districts face a greater problem of teacher shortages than any other group. Reported in a recent survey, nine Midwestern states had teacher shortages in all but two teaching areas. Characteristics of small school corporations heighten their supply problem. Some solutions to this supply problem are noted: 1) closing the salary differential, 2) rewarding superior teachers, 3) supporting small college teacher training programs, 4) demand larger role in teacher certification programs, and 5) discourage the issuance of temporary licenses.

Engel, Rose A., and Roger L. Noll. "Recruiting Shortage Area Teachers: Is There a More Effective Way?" National Association of Secondary School Principals Bulletin, 68 (1984): 105-109.

The private sector spends much more time and money on recruitment activities than do school systems. According to a reported survey, recruitment practices are an important factor when candidates choose employment. Suggestions for improving school systems recruitments practices were given. They are: 1) continuous year round recruitment efforts, 2) commiting administrative recruitment plans to writing, 3) awareness of teacher reasons for accepting employment, 4) the use of an enthusiastic employed teacher to assist on initial candidate visits, and 5) looking inside the district for possible candidates, 6) a well developed professional district recruitment brochure, 7) assisting current teachers to gain recertification in a shortage area and 8) sharing responsibilities and costs for recruitment with other school districts.

Gerlovich, Jack A., and Trevor G. Howe. "Where the Jobs Are." The Science Teacher, 50 (1983): 56-57.

The supply of new teacher graduates is not meeting the current demand for math and science teachers. Shortages are documented and predicted to continue. As a result of this report, the authors made five recommendations: 1) national organizations should monitor educators to avoid future shortages, 2) states should establish advisory committees to alleviate problems, 3) states should establish summer institutes and ongoing inservice programs, 4) states should establish scholarships and or loan incentives, and 5) eliminate the salary disparity with competing industry.

Good, Thomas L., and Gail M. Hinkel. Teacher Shortage in Science and Mathematics: Myths, Realities and Research. Educational Resources Information Center, Ed 231 683, A Summary of a Conference Sponsored by the National Institute of Education, Washington, D.C., February 10, 11, 1983.

Five research reports and analyses and six program papers were presented at the conference and summarized in the article. Participants were instructed to look at the problems of today and the future. A common goal of the conference was to insure our nations role as a leader in education, science, engineering, and technology. These points were emphasized: 1) increased high school requirements in math and science, 2) increased supply of qualified teachers and better retention of teachers, and 3) the growing significance of the micro-computer on the math and science curriculum.

Guthrie, James W., and Ami Zusman. "Teacher Supply and Demand in Mathematics and Science." Phi Delta Kappan, 64 (1982): 28-33.

The U.S. faces a serious problem if it hopes high technology will solve its economic problems. With the documented shortage of mathematics and science teachers, people qualified for high technology jobs will not exist. The U.S. runs the risk of becoming a second-rate industrial and technological country if something is not done soon. The authors listed these solutions: 1) differential pay, 2) inservice staff development, 3) school and industry cooperation, 4) improved teacher working environment, 5) upgraded math curriculum, 6) research on precocious pupils, 7) teacher linked loans, and 8) computer assisted instruction.

Kowalski, Theodore J. "The School/Industry Alliance: One Approach to the Shortage of Science and Mathematics Teachers." American Secondary Education, 13 (1983): 23-24.

The School/Industry Alliance involved a participating student agreeing to pursue a teaching degree in math or science at an appropriate teaching institute. Upon graduation, the student seeks teaching employment and then is assured a summer job with the sponsoring industry. This program would be enhanced by scholarship and pre-service programs and federal, state tax considerations. Also the problem of differential pay for these teachers would be solved while allowing for alternative growth experiences in their areas of certification. Students would be paid for their summer employment at a competitive rate.

Long, Madeleine J. "Recertification: It Is Time to Rethink the Way We Prepare Our Teachers." Change, 15 (1983): 10-12.

Recertification is seen as a means of retaining the services of the very best teachers and filling the most critical shortage areas. The benefits of any recertification program would be: 1) help maintain the teaching services of minorities who are usually the first laid off due to seniority, 2) create opportunities for mid-career rejuvenation, 3) promote continuing education among teachers, and 4) open up new vistas of learning.

Masland, Susan W., and Robert T. Williams. "Teacher Surplus and Shortage: Getting Ready to Accept Responsibilities," Journal of Teacher Education, 34, (1983): 6-9.

Out-of-field teaching and cancelling classes are the results of teacher shortages and surpluses. Out-of-field teaching by definition meant unqualified teaching. The responsibility to correct this problem lies with four groups. School systems who must assure only the hiring and placement of certified teachers. Colleges and departments of education to develop better programs and limit enrollment in surplus areas. State education agencies to monitor schools and national organizations such as the American Association of Colleges of Teacher Education to provide leadership and uniformity in data research methods in teacher supply and demand results.

Paul, Clyde. "The Mathematics Teacher Shortage--Some Solutions." The Mathematics Teacher, 74 (1981): 173-178.

The author looked at the national problem of the mathematics teacher shortage and the reasons for this problem. He made five recommendations to help solve the problem: 1) provide guidance to students, 2) write to our legislators to promote mathematics progress, 3) inform the profession, 4) keep the public informed, 5) be an outstanding teacher so students see teaching as a status profession.

Posamentier, Alfred S. and Jay Stepelman. "A Shortage of Mathematics Teachers in New York City." The Mathematics Teacher, 75 (1982): 588-590.

A shortage of mathematics teachers existed in New York City and many of the current mathematics teachers are either not licensed, are recertified, or a product of an intensive mathematics teaching training program. The current legislation proposed the following to solve the problem: 1) establishing undergraduate scholarships and graduate fellowships in mathematics teaching, and 2) establishing regent consultantships in grant form to develop new curriculum and inservice programs.

Pruitt, K. Wayne and Jackson F. Lee, Jr. "Attracting and Retraining Quality Teachers." The Educational Forum, 44 (1979): 29-33.

The authors felt that the answer to attracting and retaining quality teachers layed in elevating teaching to a respectable and competitive position among other professions. This may be done by: improving salaries, improving the career path and upward mobility pattern of teaching, and its intrinsic rewards.

Rush, Gary S. "Corrective Measures in the Teacher Shortage: Consequences and Conclusions." Education, 104 (1983): 34-37.

A critical shortage of math and science teachers is predicted and evidence predicts a general teacher shortage will soon occur. Higher pay and inservice programs were given as the two most viable solutions, but too many problems existed with them to make them long-run solutions. The solution of comparable worth added to those temporary solutions was more workable. A reworking of the entire educational system was suggested. Comparable worth of certain educational areas should be based on solid data on the part of professional educators, policy makers and legislators.

Schlechty, Philip C., and Victor S. Vance. "Recruitment, Selection, and Retention: The Shape of the Teaching Force." The Elementary School Journal, 83 (1983): 469-486.

The academic ability of teachers cannot be raised unless schools and teacher training institutes raise their standards and make the profession more attractive. These recommendations were made: 1) school should be thought of as a workplace, 2) the primary workers in schools should be students, 3) teachers become first line supervisors not low level employees, 4) teacher education should occur where it takes place--in schools, 5) a restructured teaching career ladder to include high status roles and movement, and 6) a college degree would be a prerequisite to teacher education programs.

Williams, Robert T. "Teacher Shortages--Some Proposed Solutions." American Education, 19 (1983): 47-50.

Teacher shortages exist today in specialty areas and some geographic regions. Elementary teacher shortages are predicted for the mid-1980's and secondary teachers for the next decade. A series of actions that can ease the problem now and help later should be put into action. Each action should be judged on its outcome, cost and political acceptability. The author made four suggestions with special emphasis on higher salary. The suggestions are: 1) early hiring and paying of new teachers, 2) twelve month teacher contracts, 3) state incentives to attract rural teachers, 4) state incentives for college programs, and 5) higher salaries for shortage area teachers due to the effect of supply and demand.

SUMMARY

Gary Sykes stated that teacher preparation has been virtually unchanged in America for the past fifty years. Is this what has caused the poor quality of our teachers? A combination of facts must be examined. Bakalis felt that education was the new American frontier. Anyone who possessed an education, especially a college degree, could succeed in America. During the post-war baby boom this ideal, education and success, became a reality. In the 1950's schools were built, courses expanded and standards were adjusted to keep students in schools. "No amount of money spent on education was considered to be wasted." (Buckthorpe 1979) To meet the 1950-1970 population explosion's educational needs, twenty percent of the American workforce had to be hired for educational services. This encouraged expansion by teaching institutions, for college degrees were mandatory for teaching licenses. With more occupational opportunities available for college graduates, school corporations raised their salaries to compete with industry and gain the new teacher graduates. (Schlechty and Vance 1983)

In the 1960's when enrollments began to decrease school coporations continued to hire, but made adjustments in pupil-teacher ratios and educational services. Courses on living and special needs were added. (Palaich and Burnes 1983) However, during the 1970's the economic picture changed. While enrollments continued to decline, governments restricted educational funding. (Buckthorpe 1979) Local funding also decreased as people moved to the suburbs and limited the local tax base for which education is a major item. Educational retrenchment had begun.

The current status of teaching has remained unchanged. Nationwide enrollment and educational funding is down. (McCurd, 1981) The teaching profession's status and morale are at a low point. Loss of prestige and morale have had a devastating effect on the profession. Since 1971 the supply of new teacher graduates is down nearly fifty percent. (Sykes 1983) Sykes saw falling salaries, enrollemnts and working conditions as contributing factors. Graybeal noted the opening of attractive career opportunities for women and minorities as also reducing supply.

Another problem facing the teaching profession, even in a time of tight economics, is the turn-over rate

of current teachers. Six to eight percent of all teachers leave each year, many to non-teaching jobs. (Schlechty and Vance 1983) For science and mathematics teachers the percent has been higher. (Williams 1983) Mainly the academically qualified are the first to leave. This small percentage that has been judged academically qualified (28 percent) usually left between the first and fourth year of teaching. (Employability of the Elementary and Secondary School Teachers in Indiana 1976) This has left a greying teacher workforce which demands high salary due to its experience and left the academically weak as well. Such an existing supply of teachers has lowered morale and motivation. (Wilce 1981) They have been labeled uncaring and incompetent. (Malkofsky 1983)

Yet Tyler felt that the demand for teachers and their services will be increasing in the 1980's. Ornstein stated that if you are looking at supply and demand with quality education as a goal then more teachers are needed than are being prepared. Roth also agreed that there is much confusion on this topic. While the surplus of teachers has been well documented there are acute certification shortage areas and some spotted shortages in certain geographic regions. Applegate and

McLeary reported these findings for the western United States. Almost every state in this region was experiencing a shortage of teachers in mathematics, science special education, industrial arts and vocational education. California also had a bilingual education shortage. Roth in his 1981 study found that the Central Region of the United States also indicated a shortage of teachers in these areas as well as in agriculture. Illinois had a shortage in home economics and Kansas in the language arts. Graybeal in his study for the National Education Association confirmed these results and stated that surplus teachers can be found in social studies, physical/health education, art and music. The demand for teachers, in general, has been the greatest in the South Central Region. These states are included: Arkansas, Louisiana, Oklahoma and Texas. The demand for teachers has been the lowest in New England and Middle Atlantic states.

What effect do these supply and demand factors have on the quality of teachers? Sykes assumed that an increased supply of teachers in a tight job market would increase the quality of prospective teachers. This has not happened. Poor salary, low prestige, difficult working conditions and more attractive career opportunities have kept the academically able away from teaching. (Blackmon 1982)

When the mathematics and science teacher shortage was investigated the problem of quality teachers was a key issue. School systems have two choices when a shortage of teachers exist. They can either cancel the classes or have uncertified or emergency certified teachers in those classrooms. (Masland and Williams 1983) By definition alone these teachers are unqualified. The level of their knowledge is questionable. (Sobel 1983) This problem is crucial to our youth's survival in a technological world. Low skilled jobs are virtually nonexistent having been taken over by robots and computers. (Tyler 1980) Quality teachers and education has become a first priority, especially in mathematics and science.

Harris believed that if this trend is allowed to continue a general teacher shortage will result by 1990. Already more elementary teachers are needed and secondary teachers by 1990. The supply of current teachers is low and the academic quality achieved by this group is low and declining. (Teachers--Supply, Demand and Status 1983)

By examining some of the proposals to alleviate the science and mathematics teacher shortage facts may be derived to solve the aggregate problem. Long believed

recertification would be a means of retaining the very best teachers and solving the surplus problem. It would also create mid-career rejuvenation and promote continuing education among the aging teacher profession.

Kowalski saw the school industry alliance program as an approach. This would involve a student agreeing to achieve a teaching degree in a particular field. His/her tuition would be paid in full or part by the participating industry. Upon graduation the student would teach in his/her area of certification and during the summer months would work for and be paid by the sponsoring industry. This program has many advantages as well as solving the differential pay problem.

Posamentier and Stepelman felt regent consultantships in the form of grants to school districts and colleges to develop new curriculum and inservice programs would be beneficial. Guthrie and Zusman also believed an upgraded curriculum would attract more qualified teachers and prospective students.

Masland and Williams stated that the problem rested with college educational programs. These education departments should develop higher standards and implement programs to limit enrollment in surplus teaching areas.

Gerlovich and Howe concluded that the state should monitor more closely teacher institutes and school systems. Competitive salary should also be allowed. Poor salary for teachers is the primary factor limiting student interest in teaching careers.

CONCLUSION

Many of the educational problems being faced today are a result of past trends in American education. Teacher educators have been aware of the low and declining quality of teachers. They dealt with the problem by raising starting salaries to attract more academically competent candidates. In many cases they succeeded as more students graduated from high school and entered institutes of higher education during this period.

This educational retrenchment was characterized by continued declining enrollments, a low supply of teacher graduates, poor quality teacher graduates, reduced national, local educational funding and a shortage of teachers in specialty areas.

A better economic picture and an increased birth rate depict a brighter future for teachers in the near

future. However, if current trends are allowed to continue a general teacher shortage is predicted. If this shortage followed the trends studied in the mathematics and science teacher shortage, then quality education cannot occur. As Sobel says it will be a problem of national survival.

Various short term programs have been proposed. Differential and merit pay, emergency certification, out-of-certification teaching, the school industry alliance. State monitoring of educational programs at all levels and grant/scholarship programs have all been suggested and proposed. States have begun implementing some programs. What is important is that America not remain indifferent to this problem. Quality education is a vital component to the American way of life. Everything must be done to insure its continuance and quality.

RECOMMENDATIONS

It is recommended that:

1. Educational institutions implement programs that will attract the academically able students into teacher training programs, especially areas of shortage.
2. Local school corporations establish and publish recruitment and personnel service programs to insure quality education and quality teacher retention.
3. States pass legislation increasing teacher salaries over a thirty year career plan, with differential career levels and corresponding salaries.

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BACKGROUND

I. Personel Information

Mary G. Pajakowski
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II. Educational Background

St. Mary's College
Notre Dame, IN
BBA 1977

Indiana University at South Bend
currently working on masters degree in secondary business education

III. Employment Experience (Educational)

Marian High School Mishawaka, IN 1977-1979	taught typing, shorthand, office procedures, business law, general business
Brown Middle School 1979-1981 Jackson Middle School 1981-1982 South Bend Community Schools	taught keyboarding and career exploration

currently on temporary contract for 1983-1984
permanent contract for 1984-1985 school year
unassigned a position as of this date

IV. Qualifications to Undertake Study

accepted into masters education program at IUSB
personal experience in the economic shifts in the teacher workforce
minor in economics at the undergraduate level

V. Reasons for Topic Interest

As a teacher certified in an area listed in my reading as being an area of teacher shortage, I felt my position was very secure. When I was laid off in the Spring of 1982, I was in shock. I found the process of becoming re-employed difficult unless I was willing to relocate. I also became involved in a lawsuit protesting my RIF (reduction in force--teacher term for being fired), and became interested in all the factors affecting such a situation and what could be done to prevent its occurence again.